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THE GENERA OF PUFFBIRDS (BUCCONIDAE)

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In 1882, in the last part of *A monograph of the jacamars and puff-birds,* pages xxxiv-xli, P. L. Sclater divided the family of puffbirds (Bucconidae) into seven genera: *Bucco, Malacoptila, Micromonacha, Nonnula, Hapaloptila, Monacha* (Sclater's emendation of *Monasa* Vieillot 1816), and *Chelidoptera.* The large genus *Bucco,* containing twenty of the forty-three species enumerated for the family, he grouped in two subgenera (following Wagler 1827, *Systema avium*): *Bucco,* "rostro rotundato ad basin dilatato" (fifteen species), and *Nystalus,* "rostro compresso et magis elevato" (five species). He saw no grounds for division into subfamilies.

By 1914 the trend of the times had swelled the number of genera to thirteen, as set forth by Ridgway in *The birds of North and Middle America* 6: 371-373, the increment all taking place within the limits of Sclater's genus *Bucco.* The roster in Ridgway runs *Notharchus,*[1] *Argicus, Nystactes, Bucco, Hypnelus, Ecchaunornis,*

[1] Misprinted *"Northarchus"* in the key to the genera, *"Notharchus"* elsewhere. This name, with two of its trivial adjuncts, has had an ill-starred orthographic career. In 1958 Eisenmann, *Auk* 75: 101, called attention to the misprinting in Peters 1948, *Check-list* 6: 10, of the subspecific *hyperrhynchus* (Sclater 1856) as *"hyperrynchus."* And Ridgway's *"Northarchus"* has just been noted. But there is worse to come. In recent decades (first observed in Griscom 1932, *The distribution of bird-life in Guatemala*), *Notharchus* has frequently been printed *"Notharcus,"* contrary to the original publication, with indicated derivation, of Cabanis and Heine 1863, *Museum Heineanum* 4, 1: 149 (*Northarchus* formed from *νώθης*, sluggish, slothful, and *ἀρχός*, leader, chief — though the latter incorrectly accented *ἄρχος* by Cabanis and Heine). Of less consequence than the generic misspelling is the shift (dating back at least to Wagler 1827, *Systema avium*) of the ending of the specific name *macrorhynchos* as first published by Gmelin 1788, *Systema naturae* 1, 1: 406, from *-os* to *-us,* latterly perhaps by attraction to Sclater's *hyperrhynchus,* originally a specific designation but a subspecies of *macrorhynchos* since 1939 (Sassi, *Temminckia* 4: 161).

Nystalus, Malacoptila, Micromonacha, Hapaloptila, Monasa, Nonnula, Chelidoptera. The first seven genera (comprising Sclater's *Bucco*) are grouped as the subfamily Bucconinae, the remaining six as the subfamily Malacoptilinae. Cory 1919, *Catalogue of birds of the Americas* 2, 2: 390-410, has the same thirteen genera as Ridgway, but without division into subfamilies.

Thirty years later the emphasis in classification had shifted from dissimilarity toward similarity: Peters 1948, *Check-list* 6: 10-24, reduces the seven genera equated by Ridgway with Sclater's *Bucco* to four, *Argicus* and *Nystactes* being merged with *Bucco,* and *Ecchaunornis* with *Nystalus.* The other six genera remain unchanged. No subfamilies or subgenera are recognized. Peters' arrangement has been regularly followed down to the present (e.g., de Schauensee 1966, *The species of birds of South America*).

A new review of the family has led to the conclusion that a full return to Sclater's generic system should be made by merging *Notharchus, Nystalus,* and *Hypnelus,* maintained by Peters, with *Bucco.*[2] Since the *Check-list* does not justify its systematics, one must revert to Ridgway for criteria of differentiation. Ridgway follows Sclater in dividing his subfamily Bucconinae (Sclater's genus *Bucco*) into two major groups: one with thick bill, "its width at nostrils nearly to quite equal to its depth at same point" (Sclater's subgenus *Bucco*), the other with compressed bill, "its width at nostrils much less than its depth at same point" (Sclater's subgenus *Nystalus*). In the thick-billed group he included his genera *Notharchus, Argicus, Nystactes,* and *Bucco,* in the compressed-billed group the genera *Hypnelus, Ecchaunornis,* and *Nystalus,* paralleling Sclater's division except with respect to the species included in *Hypnelus,* which were placed by Sclater in the thick-billed group. An actual check of specimens shows the amount of compression to be only very slightly greater in Sclater's subgenus *Nystalus* (most in *maculatus*).

Lesser criteria of differentiation in Ridgway relate to variations in bill shape and color, tarsus length, length of rictal bristles, length of remiges or rectrices, plumage markings, as set out in his

[2] This same merging of genera was proposed and followed by Charles G. Sibley in a seminar syllabus on the Piciformes, Cornell University, ca. 1956, but was not published. Its actual priority is hereby duly recorded.

key.[3] Thus, *Notharchus* is distinguished from *Argicus, Nystactes,* and *Bucco* by tarsus shorter than outer anterior toe without claw, upper parts mostly plain blackish, forehead sometimes white, as opposed to tarsus equal to or longer than outer anterior toe without claw, upper parts mostly brown or rufous-tawny, forehead never white. We have seen that Peters included *Argicus* and *Nystactes* in *Bucco.* Within his compressed-billed group, Ridgway distinguishes *Hypnelus* from *Ecchaunornis* and *Nystalus* by a strongly bifid maxilla (see below), longer rictal bristles, longest primaries decidedly longer than secondaries, indistinct spotting of upper parts, black pectoral band, plain (unbarred) tail, wholly black (not red, orange, or horn) bill. Peters merged *Ecchaunornis* with *Nystalus.*

Such morphological criteria, as employed by Ridgway for his seven genera, and tacitly maintained by Peters for the four genera recognized by him, do not seem adequate for separation at the generic level. With respect to ethology, there are no recorded aspects that militate against the proposed merging — though information is in general scanty and fragmentary (also repetitious), and in some species almost totally lacking.

The genus *Bucco,* now re-extended to Sclater's limits (and equivalent to Ridgway's subfamily Bucconinae), is marked by a relatively stout and straight bill, much broadened at the base, with strongly uncinate tip to the maxilla and terminally ascending more or less convex gonys. A striking feature, found to greater or less degree in all but one of the species, is the bifid tip to the maxilla. An examination of specimens shows that this peculiar process, part of the rhamphotheca and not of the underlying bone, is particularly prominent in *tamatia* and *ruficollis* (including *bicinctus,* Phelps and Phelps 1958, *Proc. Biol. Soc. Wash.* 71: 122), pronounced in *macrorhynchos, pectoralis, ordii, tectus, noanamae, striolatus,*

[3] Ridgway's key cannot be relied on even within its own frame of reference. There is, for example, no subdivision "bb" to match "b" under "aa," which renders subsequent allocations indeterminate. The genus *Hapaloptila* appears under the subdivision "aa," characterized as having the tip of the maxilla not uncinate, whereas in fact the tip in *Hapaloptila* is strongly hooked. According to the key the bill in *Monasa, Nonnula,* and *Chelidoptera* is red, orange, or yellow, true in reality of *Monasa* only. Again, *Chelidoptera* is keyed as not "tawny" beneath, though actually with cinnamon-chestnut belly.

maculatus, fairly slight in *capensis,* slight in *radiatus,* very slight in *chacuru,* and not distinguishable at all in *macrodactylus.* In a study of this bifid process, Boetticher 1936, *Festschrift zum 60. Geburtstage von Professor Dr. Embrik Strand* 1: 74-77, suggested that it might serve as a sort of vise for holding the heads of captured flying insects (especially butterflies) while the wings were sheared off by the mutually adapted tomia. He admitted that there were no specific observational data to support his hypothesis; nor have any been reported since.

The treatment of this character in Ridgway is inconsistent and in part inaccurate (notably with regard to extralimital taxa). In the key there is the general statement, applicable to all seven genera, that the tip of the maxilla is sometimes cleft medially, but no discrimination between individual genera (and hence species) until the compressed-billed group, comprising *Hypnelus, Ecchaunornis,* and *Nystalus,* is reached. Here *Hypnelus* (consisting of the currently recognized *ruficollis*) is correctly signalized as having the tip of the maxilla strongly bifid, and *Ecchaunornis* (consisting of *radiatus* and *chacuru*) equally correctly as having the tip not distinctly if at all bifid. But *Nystalus* (consisting of *striolatus* and *maculatus*) is united in this respect with *Ecchaunornis,* whereas in actuality the medial cleft is pronounced in its component species. The subsequent generic description for *Notharchus* (consisting of *macrorhynchos, pectoralis, ordii,* and *tectus*) includes a more or less distinctly bifid tip to the maxilla, but there is no later indication as to the situation in *Argicus* (*macrodactylus*), *Nystactes* (*tamatia*), or *Bucco* (*noanamae, capensis*), descriptions being omitted for extralimital genera.

A review of the remaining six bucconine genera as found in Sclater, Ridgway, and Peters reconfirms their distinctness. They all have a less stout, more compressed, less basally broadened bill than the reconstituted *Bucco,* with the gonys more or less decurved terminally and, except in *Hapaloptila,* the maxilla more gradually decurved and non-uncinate. In none of the six does the bifid maxilla occur. Differences in size, in shape and proportions of bill, wings, and tail, and in plumage patterns serve adequately to separate one from another, as described and illustrated by Sclater, and hence are not detailed here. Certain ethological features reinforce the morphological distinctions, as may be seen in the social behavior of *Monasa* and the mode of flight and flocking of *Chelidoptera,* this latter being in many respects the most divergent of the taxa included within the family.

Consequent upon the merging proposed above, the genera and species of the Bucconidae stand as follows (order from Peters, species as in Peters except as indicated, subspecies not shown):

Bucco macrorhynchos, pectoralis, ordii, tectus, macrodactylus, tamatia, noanamae, capensis, radiatus, chacuru, striolatus, maculatus, ruficollis (includes *bicinctus* of Peters, following Phelps and Phelps 1958, *Proc. Biol. Soc. Wash.* 71: 122)

Malacoptila striata, fusca, semicincta (subspecies of *fusca* in Peters; distinct species here, following Traylor 1951, *Fieldiana, Zool.* 31: 614), *fulvogularis, rufa, panamensis, mystacalis*

Micromonacha lanceolata

Nonnula rubecula, sclateri, brunnea, ruficapilla (includes *frontalis* of Peters, following de Schauensee 1946, *Not. Nat.* 163: 5), *amaurocephala*

Hapaloptila castanea

Monasa atra, nigrifrons, morphoeus, flavirostris

Chelidoptera tenebrosa.

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